

Spring 2009



ORACLE

The Institute of Sheet Metal Engineering



The ORACLE, mouthpiece of the Institute, speaks for and to the world of Sheet Metal Forming by way of featuring News, Views and Topics around the Industry

£10.00 (Free to members) (ISSN 0969-9929)



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Mr O W Pinfold

Mr E Rosmarin

Honorary Treasurer

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Honorary Secretary

Mr O W Pinfold

Telephone: 07891 499146

Email: ismesec@gmail.com

Events Officer

Mr K Allcock

Telephone: 07532 287681

Email: ismeevents@yahoo.com

Development Officer

Mr R Jelf

Telephone: 01608 737129

Fax: 01295 253333

Email: jelfie@hotmail.com

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CHAIRMAN'S ADDRESS

The challenge to manage a business against the current “credit crunch” background is made far more challenging than any previous cycle due to the attitude/reluctance of the banking system to fulfil its required function.

The challenge to gain orders and fulfil them “on time in full” and then to receive payment, is the norm for industry in these periods. You add then the need to review all costs and manning and the additional pressure of work that flows for this review.

The current recession has an additional challenge, that of our banks withdrawing facilities, removing insurance cover on established customers, and having insurance cover on your business withdrawn to your suppliers even though you are trading and paying normally.

The speed with which events are happening and, unlike previous similar periods where one country followed another in a cycle, we all seem to be in recession together. It therefore follows that only strong leadership by governments will guide us to a solution.



Let's hope and pray that the first signs of recovery are seen soon.

The Institute itself is in better shape with an increase in membership and higher attendance at our events. Times are undoubtedly hard but this a period when all of us engaged in the Industry need to pull together to ensure that for those that succeed us there will be an Industry to join.

Dilwyn Gurney
March 2009

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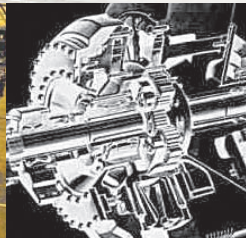
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COUNCIL MEMBER PROFILE : ADRIAN NICKLIN

PROFILE

A former senior manager in a public limited company with a UK turnover of £35m (Group £500m).

- Thirty-five years experience of the automotive industry as 1st and 2nd Tier Supplier.
- Experience in restructuring engineering departments and business units to suit company needs.
- Excellent man management skills, with the ability to form the correct team to suit the project from design concept to production.
- Specialist knowledge of steel forming, manipulation and assembly.

CAREER DETAILS

A.C.N.gineering Ltd. April 08 till present date.

In March 2008 I decided to set up my own 1 man business.

Consultancy & contract engineering resource;

- For sheet metal components in process development, planning and project management.
- Taking cad / component drawings through feasibility
- FMEA & APQP into high volume production.
- With knowledge of tooling & equipment for rolled profiles, stamping, bending and joining assembly techniques.

Customers so far 2008/9

- Confederation of British Metalforming (Sheet Metal Specialist) supporting 56 member companies. (2 days per week)
- The Regent Engineering Company. Consultancy Engineering
- Brierley Limited. (Toolmakers) Program Managing.
- Cooke Brothers Ltd .Consultancy Engineering.
- Thyssen Krupp Tallent Contract Engineering.

WAGON AUTOMOTIVE, BROWNHILLS

With large engineering teams in France & Germany and the lack of potential new business in the UK the Wagon Board decided to disband the UK Team. This meant making the members redundant and restructuring certain personnel into the Plant to deal with customer driven product changes. At the end of February 2008 I left the company.

Goodbye Wagon Brownhills Plant

As a former employee of Wagon for 35 years I was saddened at the news they were in the hands of the administrators.

Established in the 50's the Wagon Brownhills Plant started life as Edward Rose Bham Ltd. A privately owned company with emphasis on rolled section glazed assembly products for the automotive industry.

Joining the company in 1972 I could see the company was progressive and a major player in the automotive industry.

At the time a process that was key to the business was stretch forming rolled section which in the late 80's meant that Wagon were able to enter the Bumper beam market making Ford Escort mild steel bumpers and led to Wagon acquiring the Wilmot Breedon Bumper business which was transferred to Brownhills.

Supplying bumper systems to Ford, Rover & Jaguar this then gave Wagon the confidence to design & develop crash systems. In 1995 Wagon developed the first European ultra high strength steel rolled profile bumper beam for the Ford Transit which in turn opened the doors for development contracts won with Ford, JLR, Honda & Valeo.

In 2000 Wagon Automotive UK had 5 plants but with the shrinking of the UK automotive industry the business was restructured with the Tyseley & Wantage plants being sold to Sonas. The land at Brownhills was sold and leased back which really was the writing on the wall regarding its future.

At the Brownhills plant was a committed and skilful work force that really deserved better. My former engineering team who remained till the end have a vast knowledge especially in the use of high strength steels and as a result, I had no issues in recommending them for new employment elsewhere.

OTHER INFORMATION

- 2007/8/9 President of the Institute of Sheet Metal Engineering
- 2006 Chairman of the Institute of Sheet Metal Engineering
- Formerly an elected Parish Councillor for my village for 14 years
- Keep fit enthusiast – completed 2007 Wolverhampton Half Marathon
- Wolves FC season ticket holder



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E-mail: sales@ortlinghaus.co.uk

www.ortlinghaus.co.uk



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CONTACT

Ian Kimberley

Tel: 0121 377 6292

Fax: 0121 377 6645

MANUFACTURER SAYS EDUCATION IS FAILING INDUSTRY

A Birmingham sheet metal manufacturer which is struggling to recruit apprentices with average literacy and numeracy skills is berating the education system for failing to support the industry.

Keith Chadwick, MD of Radshape Sheet Metal in Aston says that secondary schools do not encourage pupils to go into manufacturing and do not understand the needs of business.

Mr. Chadwick says: "We are a thriving sheet metal manufacturer with a £4 million turnover, staff on overtime and more business than my commercial department can cope with. Four years ago we set up an in house apprenticeship scheme using the skills of our employees who are past retirement age to train school leavers. Each year it is getting more and more difficult to find youngsters with the right qualities and basic education qualifications.

"Last year, out of sixty two entries for the ISME Sheet Metal Skills Competition, Radshape apprentices won top prizes in three separate categories. One lad designed and manufactured an off road go kart using both traditional and innovative sheetmetal skills.

"Manufacturing is what made this country great. Our talented forefathers produced inventions which are used throughout the world. We should be proud to pass this knowledge and these skills down from generation to generation.

"Secondary schools must encourage pupils to discover

these traditional crafts and MUST work with and understand business needs."

"There is a massive gulf between schools and businesses, schools do not understand the opportunities that exist in our particular industry and it is this lack of understanding which stops the manufacturing sector from growing.

I have tried for over 6 months to work with one particular school (which was recommended to me) and I have not been able to establish a first meeting with the Head of Learning' – he doesn't do business visits!.

I want to work with 4 schools/ colleges particularly with 15/16 year olds who show an aptitude for coming into our industry – these will be my future apprentices , it is a shame but schools do not appear to understand and grasp the opportunities that are available."

The Aston based company has 60 employees and has become an integral component supplier for low volume niche market automotive companies. It has been building and supplying the chassis for the new Morgan Aero 8 since November 1999 and in 2002 produced over two hundred components for the Bentley State Limousine which was presented to Her Royal Highness the Queen.

Visitors to the company during the last few years have been The Duke of Kent, Sir Richard Branson, Sir Stelios Haji-Joannou (founder of Easy Jet) Gordon Brown, and Chancellor Alistair Darling.



From left, Radshape apprentices Richard Massey and Greg Whitehall with Chancellor Alistair Darling, Keith Chadwick, MD of Radshape and apprentices Jamie Sproson and Tom Gwynn



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Finance subject to approval

AMADA INITIATIVE BEATS CREDIT CRUNCH

January 2009: With many UK manufacturers finding it tough to secure finance to fulfil this year's capital equipment investment plans, Amada UK, a leading supplier of sheet metal machinery, has announced the availability of additional funds to help its customers finance new acquisitions. In fact, if necessary, the company is in a position to provide finance for all new and used Amada machines supplied throughout the course of 2009.

"The availability of extra funds addresses the current trend of having busy customers that cannot secure funding for new investments from traditional sources such as banks or finance companies due to the credit crunch," says Alan Parrott, managing director of Amada UK.

Strong track record

While the announcement of additional funds will come as a welcome boost to credit-strapped UK manufacturers, Amada is far from new to the provision of finance: the company has in fact been funding customer purchases since the early 1990s. While the original idea was to help start-up companies with no credit history during the previous recession, today the company finances more than 60% of all the equipment it supplies – a statistic that reflects dwindling credit availability from mainstream sources and greater numbers of customers attracted to Amada's clear, quick and easy funding package.

"Amada's flexible finance plan is self funded and tailored to match individual customer requirements," says Mr Parrott. "There are no third parties involved, so the decision making process is clear and easy with no hidden costs. Furthermore, no personal guarantees are needed as Amada secures the loan against the equipment."

As an additional benefit to manufacturers, Amada's funding package is a fixed rate scheme in which as well as the machine, the buyer can include maintenance plans, software, tooling and even consumables to give a fixed monthly cost while ensuring the machine's reliability and performance are at the optimum for the whole of its life. Further advantages of Amada finance include:

- very competitive rates
- no arrangement fees or other hidden costs
- new or used machines can be financed
- only a small deposit is required (or a machine made by another manufacturer can be used to form part of the deposit if preferred)
- finance transactions with Amada do not influence credit ratings
- HP allows capital allowances to be offset against tax



"We believe that the difference between Amada and the banks is the objective," explains Mr Parrott. "Banks and finance companies quite rightly need to maximise interest while protecting their investors' money. With Amada, finance is a tool to sell manufacturing solutions and make the customer successful. This way we ensure they can continue to invest in new technology from Amada in the future. I believe we are unique in the UK in having our own funds and finance system to support customers and this has never been more important than in today's challenging economic environment."

Universal benefits

One UK company that has been using Amada finance for more than 10 years is Universal Fabrications, and its managing director Carl Smith is more than satisfied with the advantages provided by the arrangement.

"One of the biggest benefits for us is that maintenance and even tooling can be included in the fixed monthly cost, which simplifies budgeting enormously," he says. "Furthermore, the flexibility of the scheme makes it easy for the company to upgrade to the latest technology with very little change to the monthly amount we pay."

While finance is a strong tie between Amada and the customer, funding is just one of the services provided by the Kidderminster-based machine tool company to support the user for the entire machine life.

"From a total staff of 135 in the UK, we have almost 100 engineers directly supporting our customers, not only to maximise uptime but also to ensure they are getting the very best from our products," concludes Mr Parrott.

For further information please contact:

Cathryn Morris
01562 749500
finance@amada.co.uk
www.amada.co.uk



Confederation of British Metalforming

Metalforming Technology Workshop

CBM Event

in association with Caparo Innovation Centre

Wednesday 22nd April 2009

Telford Campus, Wolverhampton University

This workshop combines showcasing of advanced technologies with some industrial case study of commercial applications. There is a bias towards sheet metal forming tooling technologies. The Caparo Innovation Centre with The University of Wolverhampton is providing the venue, the speakers, and the hospitality. We hope that ISME members will recognize and seize this opportunity to gain an understanding of emerging and new commercial applications. The event is free to ISME members, by registering using the fax back form.

Draft Programme

- 10:00 Registration
- 10:30 Tour of University of Wolverhampton "Rapid PD" centre, the manufacturing innovation laboratories
- 11:40 Application of technologies and innovative manufacturing developments – University of Wolverhampton
- 12:10 Advances in sheet metal technologies – Arcelor Mittal Belgium
- 12:40 Rapid sheet metal forming – Robofold Ltd
- 13:10 *Lunch*
- 13:40 Sheet metal forming without dies – Flexform
- 14:10 Hot sheet metal forming – University of Wolverhampton
- 14:40 Innovative lubrication systems – Fuchs
- 15:10 Q&A session
- 15:30 End



£££: ISME members & members' guests FREE; Non members £50 + VAT



Confederation of British Metalforming

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INVESTOR IN PEOPLE

ENTRY-LEVEL PUNCH PRESSES AND PLASMA CUTTING MACHINES

A new range of entry-level punch presses, punching / plasma cutting combination machines and hydraulic notching equipment has been introduced to the UK and Irish markets by Press & Shear Machinery, Tamworth. It follows the conclusion of a sales and service agency agreement with the machine manufacturer Boschert, Germany.

The punch presses range from manually operated models with stops set by hand or equipped with a digital readout, up to programmable CNC machines.

Models with twin or triple punching heads are available, the latter version offering 24 tools for manufacturing complex sheet metal components without tool changes. One head can have 360-degree, stepless rotation of all tools up to 105 mm in diameter, or alternatively a seven-position Revotool that includes a 5 x 30 mm slitting tool for contouring.

Sheet sizes up to 3,000 mm x 1,500 mm can be accommodated and the machines are particularly fast in operation, with 67 m/min positioning in X and Y simultaneously and stroke rates up to 800 per minute.

Another example from the punch press range is the Boschert Compact, a single-head CNC machine



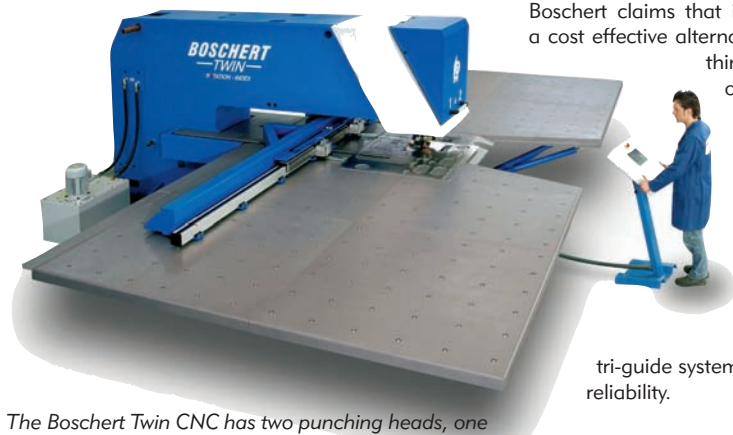
The new, single-head Boschert Compact CNC punch press from Press & Shear Machinery.

with revolving head option for processing sheet up to 2,000 mm x 1,250 mm. Described as ideal for the first-time user, the machine has graphic-based programming and a small footprint, yet the C-frame design allows working of oversize sheets using the automatic repositioning function.

Combicut machines include plasma cutting and forming of sheet up to 3,000 mm x 1,500 mm. Proprietary FineFocus plasma technology allows clean, dross-free cut edges and positioning tolerance ± 0.2 mm with 0.03 mm repeatability. The plasma head is mounted on a separate frame from the punching head to ensure vibration-free plasma cutting.

Boschert claims that its fine plasma technology is a cost effective alternative to laser cutting, even on thin materials. One of the heads on the twin- and triple-head punching machines may be fitted with a plasma head. Even single-head Ecco Line CNC punch presses can be converted to plasma-only machines.

The range of hydraulic notching machines is equipped with the patented tri-guide system, ensuring high accuracy and reliability.



The Boschert Twin CNC has two punching heads, one of which can be swapped for a plasma cutting head.

Press & Shear Machinery Ltd, 12 / 14 Ninian Park, Ninian Way, Wilnecote, Tamworth, Staffs B77 5ES.
Tel: 01827 250000. Fax: 01827 250022. Email: sales@pressandshear.com Web: www.pressandshear.com
Contact: Mark Britton, Managing Director.

Ted Rosmarin 1926 – 2009

ISME has lost a good friend and supporter

Ted Rosmarin had suffered failing health for a few years and passed away in his sleep on Thursday 26th February at the age of 83.

Ted was a Chartered Engineer working at Dexion and later acting as an expert witness, roles which he performed with great skill and professionalism.

He was a keen and active member of ISME and served as Treasurer, Secretary and later as President.

All of us who were fortunate to know Ted were impressed by his calm approach to matters and his quiet but firm and fair way of dealing with tasks. Always ready with a kind word and his cheerful smile, he spread friendship wherever he went.

His wife, children and grandchildren were his pride and joy and will miss him profoundly.

He touched the lives of all with whom he came in contact and he leaves the world a richer place because of his influence in it.

Farewell dear friend.

Wilf Taylor

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WALTER FORSTER BECOMES STRONGER IN SMALL SERIES THANKS TO HYDROFORMING WITH PRESSURE DOME

Pressing sheet metal parts with complicated geometry, fine surfaces and narrow tolerances is usually a complicated process requiring expensive tools. That is, unless you use hydroforming with pressure dome. German metal former Walter Forster discovered the potential of this relatively simple method of making the impossible possible and therefore purchased a 400 ton AP&T press with associated pressure dome.

Walter Forster, situated outside of Hamburg, manufactures metal parts in series ranging from one part to one million. The company has several important customers in the medical-technical industry, where they manufacture very short series from 100 to 500 parts per year. In these series, narrow tolerances and a high degree of surface fineness are important parameters. With the new equipment from AP&T, the company will be able to take on more assignments that it previously had to turn down.

Sees great potential

“We didn’t have any concrete customer orders when we decided to purchase the equipment, but I’m not worried. When our customers learn of our new expanded capacity, we will have much more to do;” says Walter Forster’s Volker Rohrbeck, assistant to the technical management team.

Small series more efficiently

Walter Forster decided to acquire a hydro-forming press with pressure dome as a means of expanding its service offering and to be able to develop the pressure dome and forming technology.

“We will be able to manufacture small series of complex parts in just a few production steps. We will also save money on tool manufacturing and be able to attract new customers:” says Volker Rohrbeck.

Fluid and mechanics working together

The principle of hydroforming with pressure dome is that a punch presses in the sheet blank in a fluid-filled chamber - the pressure dome. The liquid is at an extremely high pressure - up to 900 bar. The blank is then pressed against the punch with uniform force and forms itself to it. Since it is liquid that presses the blank against the punch, the part acquires an extremely fine, scratch-free surface. It also makes it possible to meet extremely narrow tolerances.

Reduces tool cost

Since the punch is the forming tool, tool cost is extremely low compared to other forming methods. Since the liquid presses against the punch at right angles, it is possible to form parts that cannot be formed in conventional drawing operations in which press force only has one direction.

“The impossible becomes possible and with tool cost just a fraction of what it used to be, a world of extremely cost-effective, small series manufacturing of parts with complicated geometry opens up;” says Magnus Svenningsson, AP&T’s key account manager for Walter Forster.

Best for both form and the environment

If the pressure dome is the heart of the process, then the associated HMU unit is its brain. It is here that the counterpressure in the dome’s liquid is generated and regulated. It is even possible to precharge the pressure for optimal cycle times. AP&T’s solution is unique since the liquid used is water with an infusion of lubricant. Water is less pliable than oil and is therefore better suited to forming than oil, which is used in other pressure dome de-signs on the market. It is also environmentally friendly since the pressed part is easier to wash and the need to handle large quantities of oil is eliminated.

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Japanese based, ALTECO CHEMICAL PTE LTD, one of the foremost cyanoacrylate adhesive (commonly known as Super Glue) manufacturers in the world, has purchased an advanced backward extrusion press from Wakefield Company, Joseph Rhodes Limited.

The award winning Rhodes KJX-25 Horizontal Impact Extrusion press will be commissioned into a new production line to extrude aluminium bodies for the production of super glue tubes.

ALTECO is a fully integrated aluminium collapsible tube manufacturer offering a comprehensive range of facilities from Research and Development through to adhesive manufacturing. The "ALTECO" brand has gained worldwide recognition through their quality products and services, which they export to more than 50 countries worldwide.

Joseph Rhodes is one of a few companies in the world capable of manufacturing horizontal impact

extrusion presses, and was chosen by ALTECO to supply their next press due to the technical and innovative nature of the machine, coupled with the Company's reputation in the market place for excellence in workmanship, service and finish.

The Rhodes KJX-25 Extrusion Press has been specifically designed and developed for continuous high-speed operation with complete reliability. An improved linkage arrangement ensures that inertia forces within the press are reduced to a minimum. The AC variable drive motor available as standard makes automatic speed changes quickly and safely.

The Ergonomically redesigned tool-space area with improved accessibility makes the KJX press a popular choice with plant operatives. State of the art design features include PLC and a load measurement stress sensor, which measures tonnage at each press stroke and monitors for overload and underload of the press or tooling.



EVENING FORUM HEALTH & SAFETY WEDNESDAY 21ST JANUARY 2009

INTRODUCTION

The January Health & Safety Forum is a well established and popular annual event in the ISME calendar. This year was no exception and attracted over 30 attendees, including members of the GTMA and CBM in addition to the usual ISME and Engineering Inspector stalwarts.

THE HEALTH & SAFETY (Offences.) ACT 2008.

Our speaker on this subject was Mr Mike Ponsonby, a legal consultant who specialises in Health & Safety Law. Mike's presentation gave a history of how this new act came into force following major incidents such as the Zeebrugge ferry and Ladbroke Grove rail disasters where many hundreds of people either lost their lives or were seriously injured as the result of the major failings in Health & Safety policy and the enforcement agencies found it difficult to bring any convictions due to limitations in the existing law.

This act significantly increases the fines and penalties that may be issued by Magistrate Courts on Company Directors in relation to Health & Safety breaches. In fact part of the act came into effect on the 19th January and allows the lower courts to issue fines up to £20,000 and up to 2 years imprisonment.

Mike reminded the audience that Directors have responsibilities under this act and the 1974 Health and Safety Act. Managers and employees also have responsibilities under the 1974 act where our omissions may lead to prosecution.

An illustration of enforcement of this new act was given. Senior Managers of a transport company knowingly allowed its HGV drivers to regularly exceed their hours. One driver fell to sleep at the wheel and crashed in to the rear of a stationary articulated lorry and was instantly killed. The Managing Director and the Company Secretary were successfully prosecuted under the act for failing to stop this practice



Over 190 people died when the roll-on roll-off ferry capsized off Zeebrugge, Belgium on 6 March 1987.

The bow doors had been left open after departure, and water flooded the car decks.

The Crown Prosecution Service charged P&O European Ferries with corporate manslaughter in 1989 and seven employees with manslaughter.

The case collapsed but it set a precedent for corporate manslaughter being legally admissible in an English court.

The tragedy led to new safety regulations.

(source BBC NEWS Website.)



HSE report that of the businesses who have contact them:

90% of employers and chief executives consider that Health and safety requirements benefit their company.

Source: HSE Myth of the Month Website.

and received fines exceeding £400,000 and prison sentences of 18 and 13 months respectively.

A lively Q & A session followed during which a number of audience expressed a concern that growing Health & Safety legislation and the growing compensation culture in the workplace placed a unwanted financial burden on companies, especially in the current economic climate. Mike pointed that in fact the majority of companies regarded good Health & Safety practices as a cost avoidance and that we ignore it at our own peril.

MACHINE DIRECTIVE 2006/42/EC.

Our speaker on this subject was Mr Mike Dodds, Assistant Director (Single Market Directives.) BERR and gave a presentation on the background to why the new Directive 2006/42/EC came about.

The Directive which comes into effect on the 29th December 2009, has a number changes in scope and greater clarity on the interaction with other EC directives.

SCOPE:

- Needed slight extension (e.g. builders' hoists)
- Needed clarification, especially on
 - Interface with Low Voltage Directive (Art. 1(2)k)
 - Interface with Lifts directive (Art. 24)
 - Safety components (Art. 2(c)/Annex V)

SUMMARY OVERVIEW:

- No major changes or new requirements
- Numbers similar with a correspondence table
- No general need to re-write Standards – change to Annex Z
- No need to re-write most technical files
- Some rewording to make meaning clear

- Less prescriptive – eg lists of machines requirements must apply to, are removed
- Section 6 “lifting of persons” is the biggest change reflecting the Directive’s change in scope and brings in a lot of requirements that are now “good practice”

Further information can be obtained from the following websites.

- BERR’s Machinery and Lifts webpage
 - <http://www.berr.gov.uk/whatwedo/sectors/sustainability/regulations/eccdirect/page12543.html>
- Europa at
 - www.europa.eu/enterprise/mechan_equipment/index_en.htm

HSE BRIEF: – Hydraulic Presses (two hand controls)

Our original speaker on this subject was Mr Simon Edwards. - HM Inspector of Health & Safety Manufacturing Sector – Engineering. However due to operational issues Simon had to cancel and we were very grateful that Mr John Graham, Zurich Assurance who sits on the standards working group for as the representative for SAFed

The issue of the new standard for Hydraulic Presses, EN 693 in 2001 allowed the use of two hand controls as a sole means of safeguarding, this was also the same for EN 692 Mechanical Presses and EN 13736 Pneumatic Presses.

The HSE issued a formal complaint to the EC as it was seen by the HSE and UK industry that this represented a dilution of UK safety standards. This was supported by the CBI, EEF, MTTA, SAFed etc as it

was felt that the use of 2HC did not satisfy the EHSR’s of the Supply of Machinery (Safety) Regulations 1992 (as amended)

Since then, various amendments to the wording of the standard have been made and submitted, only to be regularly rejected by the other member states who sit on the working group.

Finally in 2008 there appeared to be a greater consensus across Europe on a form of revised wording and at the WG meeting at Amada in Kidderminster in 24/25.06.2008 a form of wording was agreed and put forward for acceptance.

The proposed wording is stated below:

5.3.16 Two hand controls used in production mode

5.3.16.1 Two-hand control devices shall conform to type III C in EN ISO 13851:2002.

5.3.16.1.1 When a press has a horizontal table size of more than 1200 mm, two hand controls shall not be provided as the sole safeguarding measure.

5.3.16.1.2 When a press has a horizontal table size of 1200 mm or less and a two hand control is provided, the access shall be restricted so that only the operator can access the hazardous area.

5.3.16.1.3 When a press has a horizontal table size of 1200 mm or less and the aperture (see figure xx) is less than 650 mm, a two hand control may be used as the sole safeguarding measure.

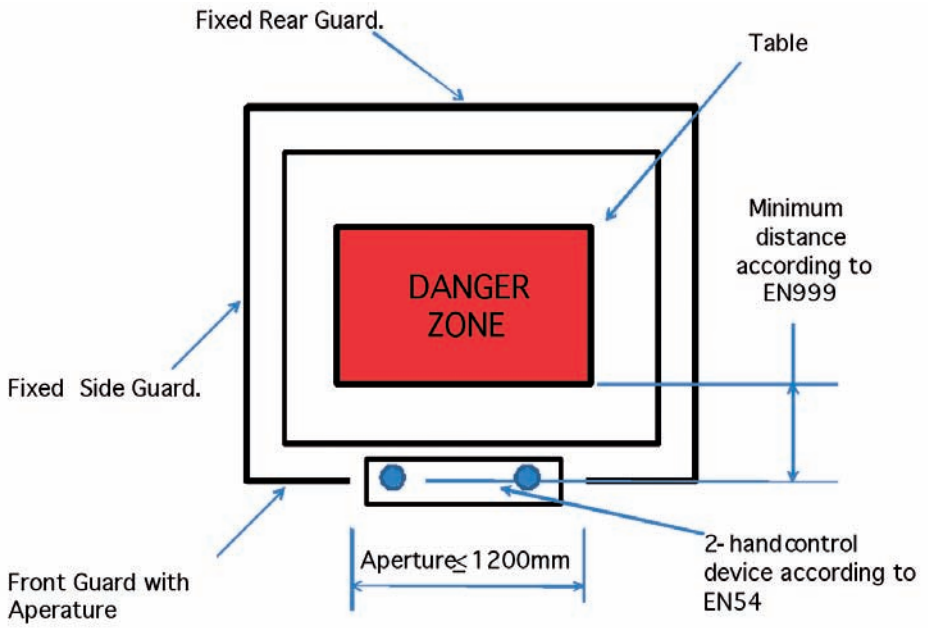


FIGURE XX

NOTE: Restriction measures should conform to the relevant standards (for example EN ISO 13857).

EXAMPLE:

The presence of other exposed persons is prevented by:

- fixed guards or by fixed work station design or,
- by ESPEs using AOPD or,
- equivalent engineering controls,

to ensure that the machine is stopped before hazardous parts can be reached.

John went on to explain what the situation was with Hydraulic Press Brakes standard EN 12622

The final draft came out at the end of last year for editorial comments by 01.12.2008. The next meeting of the CEN/

TC 143/WG1 is scheduled for February 2009 where presumably the final vote will be held and the revised standard issued sometime thereafter.

Whilst a lot of the new standard will be similar to the one it replaces (2001) there are some significant additions with regard to:

- Laser guarding,
- Scanners,
- Use of programmable electronic components (PES),
- Definition of when machine stopped,
- Descriptions of categories with respect to safety related functions of the control system
- Definition of modes, setting, production – automatic, manual.

Keith Allcock - IMSE Events Officer.

THE SCIENCE OF FORMING STUART KEELER

THINGS THAT BOTHER ME—PART TWO

Over many years in this field, I have kept a log of Things That Bother Me.

The log contains statements about metalforming made by seminar speakers and classroom attendees, sentences in technical papers, and comments made in magazine articles or ads that make no sense, are completely wrong, or show a lack of understanding by their creator.

Last month's column contained a number of items from the log. This month's column continues with more items.

Identifying the Material

- "We know all about the coil properties. The mill sent us the certs for our coil."
- "We have the heat number of the coil that does not work. The mill should be able to tell us what is wrong with our Coil."

Many steel mills produce heats ranging from 100 to 350 tons of steel per heat depending on whether the mill uses electric-furnace or basic-oxygen process technology. Controlling the chemistry of the heat is of key concern to the steel mills. Some of the specific chemical values of the heat usually carbon, manganese, phosphorus and sulfur make up the certs that are available to customers. Chemistry is one of the inputs used to create a specific set of mechanical properties in a coil, but knowing only the chemistry is insufficient to deduce the final mechanical properties.

The heat number is helpful in troubleshooting sheetmetal problems. However, 100 and 350-ton heats will generate approximately 20 and 70 coils weighing 10,000 lb. each, respectively.

Any of these coils may have different final properties because each coil could receive different processing. One must keep track of the coil number all the way to the part.

Placing Blame

- "This coil is bad. It does not make good parts."

The user complains about bad material. The supplier replies that the same coil can make thousands of good parts having a different design. Maybe the die is not good. User responds: "My die makes perfectly good parts using steel from other suppliers." The finger-pointing continues with much wasted time and no problem resolution. The fundamental problem is not good or bad material but a mismatch between the material supplied (numerically defined mill-property capability) and the needs of the part design/die/press combination (numerically defined engineering window). A supplier and user team focused on matching mill capability and the engineering window is much more effective and in the end results in buy in by both sides.

Defining Lubrication

- "Some companies form cold-rolled steel dry without any lubrication."
- "I do not use a lubricant. My steel only has a rust-preventive liquid put on by the mill."

Unless your steel has a gritty red surface called rust, its surface has a rust preventive liquid or some other process to isolate the iron from oxygen. The rust preventive solution, often called mill oil, also acts as a lubricant. Using a laboratory-standard tool and sheetmetal, the mill oil has a measurable coefficient of friction. Many mills can replace the mill oil with a lower-coefficient-of-friction lubricant to obtain better results for more difficult forming while maintaining rust prevention.

Making Decisions Without Data

- "The steel is no good."
- "I (chase one feel, think, assume, know) the problem is..."
- "It's probably..."
- "I am comfortable with..."
- "Go fix the problem."

We hear these phrases too many times. Troubleshooting or problem solving requires at least two numerically defined progress points before one can even begin the solution portion of the task.

The first is a numerical definition of the problem. This definition is the starting point for progress tracking. Problem solving experts state that creating the numerical definition of the problem is more than half of the problem solution.

The second numerically defined progress point must be the target or final goal. If you do not know when you have solved the problem, how will you ever know when you have been successful? In addition, one now can numerically track progress from the starting problem definition to the final problem target. The five statements above represent defeat before even crossing the starting line if anyone can even find the undefined starting line. Everyone should prepare a large sign and hang it in their workplace stating, Decision-making without data is another form of guessing.

Using Improper Data

- "The bad sample had a hardness of RB 44, while the good sample had a hardness of RB 42. We set the specification at RB 42 maximum."
- "The bad sample had a hardness of RB 42, while the good sample had a hardness of RB 44. Now, do we set the specification at RB 44 minimum?"
- "What is the small shiny spot on the backside of the hardness test sample?"

The first two conditions could occur in the same group of samples. Two samples from a population of samples do not make a valid statistical conclusion.

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There is a range of hardness values for both the good and bad (here we go again with finger-pointing terms) population of samples. Picking only two is not valid. A shiny spot on the backside of the sample in line with the indenter means the hardness test also is measuring the hardness of the test-machine anvil upon which the sample rests. Want a different hardness reading? Change the hardness of the anvil.

Bypassing Normal Logic

- "I use only hot-rolled steel because cold-rolled steel is too hard and the formability is gone after all that reduction in thickness."
- "I put the one-side-galvanized surface on the outside because the part splits if I put the galvanized surface on the inside as the part print specifies."
- "I did not know you could get cold rolled steel without stretcher strains. I have been ordering dead soft steel and polishing them off of all of my parts."

Misconceptions and not searching for acceptable solutions can be expensive. After reviewing the list of Things That Bother Me, one must begin to wonder where to focus attention as we move into a more competitive world environment. Will new and faster presses, computers, CAD, electronic measurement systems, and other expensive equipment and programs by themselves solve all our problems? On the other hand, do we need to step back and establish a solid foundation of simple understanding of the how and why things work?

We all remember GIGO: garbage in, garbage out. Unfortunately, today, with so many computers and electronic devices, GIGO has become garbage in, gospel out. We now must understand what we feed into our computers, dies and everything else associated with metalforming.



Stuart Keeler (Keeler Technologies LLC) is best known worldwide for his discovery of forming limit diagrams, development of circle grid analysis and implementation of other press shop analysis tools.

Stuart's sheetmetal forming experience includes 24 years at National Steel Corporation and

12 years at The Budd Company Technical Center, enabling him to bring

a very diverse background to this column and the many seminars he teaches for PMA.

Keeler Technologies LLC, P.O. Box 283, Grosse Ile, MI 48138. Fax: 7341671-2271 E-mail: keeltech@comcast.net

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SERVICE FROM THE HEART - WORLDWIDE



Ronny Martinsson (pictured) is the man at the heart of Water Jet Sweden who guarantees same-day courier dispatch of more than 90 per cent of all spare part orders received by 2.00 pm.

As one can imagine and might expect to see at WJS, an advanced vertical rotary, computer-automated storage bin and retrieval system holds and controls stocks of more than 1,000 different spare parts for the various water jet cutting machines. A sophisticated alarm system sounds when pre-set levels of any particular item threatens to run low.

Same day dispatch

Orders that cannot be supplied the same day (so-called 'back-orders'), are subsequently dispatched, usually by UPS express courier service, free of freight charge costs to the customer.

Customers are advised to maintain their own stocks of some low-cost parts. Says Ronny Martinsson: "A good example are rubber o-rings. We just dispatched 5 of these, costing € in total, to China, but the freight cost came to 220!"

'Pirate' suppliers

On the subject of 'pirate' suppliers of cheaper spares, Ronny warns against possible aspects of false economy, especially if fitting by a specialist WJS service engineer is necessary, as in the case of control system parts.

WJS service engineers

Stressed is the necessary specialist training. All WJS service engineers are required to undergo three days training at WJS headquarters in Ronneby, Sweden, in addition to three days on installation site, such are the high levels of water jet technology, accuracy and computer control to be learned.

Ronny Martinsson can be contacted by telephone direct on: 0046 (0) 457 45 54 45 or by email: ronny.martinsson@waterjet.se

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In order to survive these difficult times Manufacturing companies must find ways to make the most of limited resources. To enable you to do this the Manufacturing Club is offering you a ‘free’ business review to help you identify the opportunities to improve your manufacturing efficiencies and free up valuable working capital for your business. Releasing working capital into your business can allow you to kick start innovation and diversification activities necessary to ensure your business can survive and be competitive.



The business review, conducted by a manufacturing expert, will provide you with a written report to help you summarize your current position, identify improvement opportunities and allow you to benchmark against the competition.

Following the review ,qualifying SME’s, may also be able to secure support to help introduce improvement activities identified.



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NEWS FROM T.M.A. ENGINEERING LTD.

T.M.A. Engineering Ltd. was established in 1973 to service the power press industry; they have 30 employees which includes machinists, fitters, welders and mechanical & electrical service engineers.

TMA acquired Taylor & Challen and CVA-Rockwell presses several years ago to expand the overall service they can offer press users.

They have recently delivered an order for a NEW special purpose blanking press for a customer in Thailand. The press has been completely manufactured & built by TMA including the electrical control system, the press is a 15 ton 'under-driven' four pillar type with the crankshaft under the bed.

It has a 25mm fixed stroke, variable speed 75-150 SPM, pneumatic friction clutch/brake unit, 900x900mm bed, CWP servo feed and Ciecو press control system. The press will be integrated in a line with an existing HME K360 knuckle press.

TMA have also supplied an HME C28 200 Ton press which has been completely overhauled, with a modified ram to incorporate a sliding top tool. The press has been fitted with an automatic sliding screen guard, and a complete new electrical control with a PLC to automate the cycle.





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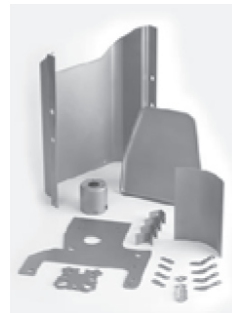
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Metalforming Machinery Makers Association has signed up to the SUBCON 2009 Show and will have a Metalworking Pavilion to feature its members.

At present the following members will take part:-

ASC UK Ltd.....	Rollforming lines
Atkin Automation	Press feed equipment & coil lines
Bruderer UK Ltd	High speed Power Presses & ancillary equipment
Davis (Decade) Ltd	Press load & monitoring systems
Formit Ltd	Rollforming lines
Joseph Rhodes Ltd	Hydraulic & Mechanical Power Presses
Midland Power Press Services Ltd.....	Press spares & repairs
Ortlinghaus Ltd	Clutches & tool clamping equipment
Roemheld UK Ltd.....	Tool clamping systems
Schuler Presses UK Ltd	Hydraulic & Mechanical Power Presses
TMA Engineering Ltd.....	Press spares & repairs
Tower Machine Tools Ltd.....	CNC Turret Presses
Worcester Presses Ltd	Mechanical Power Presses

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CENTRAL PROFILES SEE MATERIAL AND LABOUR SAVINGS THROUGH CAM AND NESTING UPGRADE

Central Profiles Laser Cutting Ltd, based in Kidderminster, provide sheet metal subcontract services using their three Bystronic lasers. When the company was founded in 2000 Managing Director Russell Flory investigated two CAM systems, one of which was JETCAM. He took advice from another sheet metal manufacturing company, which recommended JETCAM as easy to use and very efficient.

"At the time we were renting machine capacity but due to business demands we bought our own machine and needed something to run it. I looked at two systems, one of which was in the running as it was well known. In the end I took the recommendation of another user and went with JETCAM because they said it was easier to use."

JETCAM Expert with free form nesting was installed in 2000. Since the company's formation they have been proactive in upgrading their technology, initially starting with a Mazak laser, followed by another in 2001. In 2002 they purchased a second seat of JETCAM, and in 2004 they replaced one with a Bystronic laser and have since rotated their other machines to leave them with the current three Bystronics. At each stage Central Profiles only needed to purchase a postprocessor or modify any existing post to start using the new machine.

In 2003 a competing CAM company offered Central Profiles a system at a knock down price. Always interested to see if they could make further savings, Russell decided to try it. "We were offered the software for £500, so it was worth a go, however despite training it was just too complex to use and the programmers just went back to using JETCAM."

Russell attended the MACH show in April 2008, stopping by JETCAM distributor's Press and Shear's booth. "I only stopped to say hello, however when they demonstrated JETCAM Orders Controller and High Performance nesting I could see that we could make some major savings. Steel prices were going through the roof, touching £760 per tonne."

They upgraded one seat to High Performance Nesting (FFHPN) and installed JETCAM Orders Controller (JOC) on the shopfloor. Immediately programming time was reduced. "I wanted more than just being able to pick parts to order. JOC isn't technical - it's very easy to use. We just import a CSV file containing all of our orders, which populates JETCAM's materials and orders databases, which can then be automatically nested. We was able to reduce staff from two to one, freeing up resources to be deployed elsewhere." Once the parts have been nested JOC is updated to reflect the completed nests

and number of parts nested. Filler parts can also be added for frequently cut parts to fill additional space that would otherwise be scrapped. FFHPN also delivered clear benefits, saving on average 4% over previous best nests.

Central Profiles have received several beneficial software updates through their maintenance contract. They often cut parts on thick material, with one particular small part cut on 10mm steel. "We fit 1100 of these on a single sheet, and the heat build up would be colossal, but with JETCAM's heat avoidance we can fill a sheet and it will not cut over an area again until it has sufficiently cooled. Even the lead-in is taken into consideration. With this update we can now leave jobs like this running unmanned."

The company also has three Amada Press brakes, and uses SolidWorks to design parts, also storing bend information. With the JETCAM SolidWorks import filter Central Profiles can now import native SolidWorks files into JETCAM for nesting and use the same files with bend information for the press brakes.

Russell was extremely satisfied with the latest upgrade and sees JETCAM as an integral part of the business. "We chose JETCAM initially because of its ease of use but we've stayed because of the performance and support from Press and Shear, even when we had the chance to switch. The upgrade paid for itself within six months through labour and material costs alone. Even in the current climate I am happy in my own mind that we made the right decision to upgrade, rather than stand still as a business."

About JETCAM International

JETCAM International has been developing and distributing its JETCAM Expert range of CAD/CAM software since 1986. In use in over 70 countries worldwide, JETCAM Expert software supports virtually every CNC punching, laser, plasma, routing, waterjet and flatbed cutting machine available today, allowing users to program any combination of CNC machines with a single CAM system.

Contact information:
JETCAM International
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Press Feeds— Selection and Operation

What advantages do air and servo feeds bring?

Read on to find out which is best for your press-feed needs, and how you can get the most out of it.

Air-operated reciprocating feeds and programmable servo-driven roll feeds represent a large portion of press feeds in use today. Interestingly, their use has recently branched out to applications such as automation, assembly and speciality machinery.

Air-operated reciprocating feeds, or air feeds, feature actuation via mechanical, electric solenoid or pneumatic valve. In all cases, the feed should be controlled by the press. An air feed may grip the edge of material or clamp the full width to move it.

Programmable servo-motor-driven roll feeds, or servo feeds, also offer a number of variations, such as feed-roll release for pilot pins or for camber correction. Roll release may be mechanical or pneumatic, controlled by a solenoid valve which in turn is controlled by the press. Feed-roll squeeze may be controlled by spring pressure or air pressure. The servo-feed control may be taken over completely by the press controls—for the highest level of safety, the servo feed always should be controlled by the press. A servo feed also may be paired with another machine, such as a cutter for cut-to-length operations.

Air-Feed Considerations

Air feeds offer a number of features and benefits to stampers, and cost is relatively low considering all that these devices deliver. Air-feed accuracy and repeatability excel due to the feed slide block moving between two positive stops.

The three most important points in setting up and running air-feed equipment: alignment, alignment and alignment. Air feeds offer great flexibility because they allow feeding of unusual shapes in unusual positions. With its small envelope, the air feed allows mounting on



Air feeds offer a number of features and benefits to stampers, and cost is relatively low considering all that these devices deliver. Given their compact size, air feeds can mount on bolster plates or directly on dies, resulting in quicker changeover, reduced setup time and no required alignment of feed to die.

the bolster plate or die itself—an old technique made practical by the low cost of an air feed—to push or pull material through the die. Benefits of die-mounted feeds include quick changeover, reduced setup time and no required alignment of feed to die.

However, air feeds do have disadvantages. Progression- or feed-length changes can be time-consuming, requiring hand tools and trial and error. Servo feeds, alternatively, only require users to enter a new length or job number. And an air feed requires a constant volume of high-quality air. Excess oil, dirt and water in the air will shorten feed life and inhibit function, and fluctuating air volume will cause erratic feeding. Though simple, air-feed repair requires complete disassembly and installation of new O-rings and seals. A feed manufacturer or distributor can perform the overhaul quickly, and repairs should be backed by a warranty.

Air feeds generally run best with flat material, so keep an eye on excessive coil set, which may hamper feed motion. If you have a unique application, discuss it with your distributor or the manufacturer.

Choosing and Modifying Air Feeds

Air feeds may be equipped with accessories and options including anti-buckling guides for limp, delicate materials such as very thin flat or wire stock feeding at high speeds or long progressions. When producing tight-tolerance parts, air feeds can be provided with clamps to release the stock for pilot-pin positioning, bringing increased accuracy. Clamps may be grooved or profiled to feed round or unusual shapes, or padded to protect the material or finish. Also, a multi-stroke control may be employed for long progressions.

When shopping for an air feed, consider if the application is right for an air feed—are material thickness and width suitable? And note that the speed range of an air feed may top out at 300 strokes/min. Make sure that the feed manufacturer can provide complementary equipment—reels, straighteners, loop controls, etc.—on a timely basis and can respond rapidly to support requests. And a good supplier should be able to easily modify standard equipment to meet your unique needs.

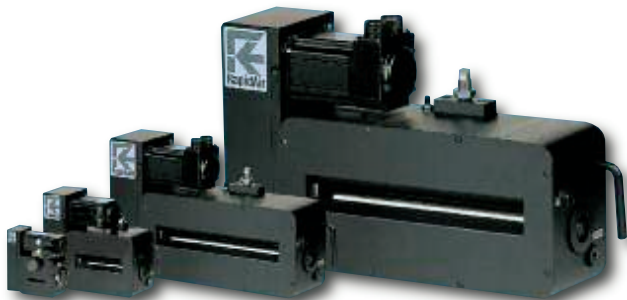
Servo-Feed Features and Benefits

One major benefit of a servo feed is its high production rate—perhaps twice that of an air feed—that translates into rapid return on investment. A servo feed can store many jobs and provides simple job setup. Given some basic information related to strokes/min., feed angle, feed length and pilots, the feed will

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calculate best acceleration/deceleration and speed. You may override the feed advisor and set these elements, then store them with the job number. The ability to recall a stored job with all of its parameters significantly cuts changeover time, making servo feeds ideal for short runs or frequent job changes.

Servo feeds bring additional flexibility, too. The servo-feed display may be able to switch between English and metric units, and options allow toggling between



One major benefit of a servo feed is its high production rate—perhaps twice that of an air feed—that translates into rapid return on investment. Also, a servo feed can store many jobs and provides simple job setup.

languages, say English and Spanish. Best practice for servo-feed

care points to cleanliness. Keep the rolls and interior clean, and protect the controls from dirt and lubricant.

Servo Feeds are Problem Solvers

The servo feed is a problem solver in its basic state. Explore its many options for other production solutions, such as special feed-roll coatings or finishes that may be available. Urethane-coated rolls will protect painted, polished or soft material, while a roll provided with a matte or knurled finish offers improved grip. Servo-feed rolls also may be relieved or profiled to handle unusual material shapes with such profiling possibly serving to guide material.

Multiple-strip feed is another benefit of servo units. These feeds can be set up to feed two or more strips with close spacing. Strip 1 feeds through the first feed and is moved by the second feed while strip 2 is moved by the first feed and feeds through the second feed. This arrangement allows equal as well as unequal moves. Feeding multiple strips with a single feed (air or servo) is difficult, however, with gripping sufficient on one

strip but not on the other, resulting in inconsistent feed lengths. Servo stagger-feed models are

Press Feeds

designed to aid setup by selecting the best pattern for round or nonround parts. This technique allows the use of irregular width material with minimum waste, and by pre-programming the optimum pattern, coil-material waste is reduced. Servo feeds with a gag program allow a pattern of changing feed lengths with



Servo stagger-feed models are designed to aid setup by selecting the best pattern for round or nonround parts. This technique allows the use of irregular-width material with minimum waste, and by pre-programming the optimum pattern, coil-material waste is reduced.

outputs for punch control, and gag programs can be customized.

A tandem servo feed, with an entrance and exit servo used to grip and move the material in harmony, offers another solution for feeding thin or flexible material. Electronic gearing between the two feeds maintains light tension on the material. Tandem feeds may be used with coil stock, strip stock, piloted dies and gag dies.

Selecting the Right Servo

Today's compact servo feeds boast state-of-the-art controls that offer features of larger, more expensive units. All of these servo-feed features may result in simpler, less expensive dies that may be fed diagonally, side to side or in any pattern. When shopping for a servo feed, match the feed to the job or potential application. Consider the preponderance of jobs, stock thickness, stock width and speed in your operation. Review the operating manual—available online from most manufacturers—for your possible equipment selection, looking for ease of operation and maintenance. Find out if the supplier has the capability to offer a full line of products and support growth with payoff reels, straighteners and other support equipment that can be easily integrated with your feed and press operation. Also check that the supplier stocks items to make mounting and feed operation more effective: mounting brackets and tables, pilot release, press-control interface, etc. What about product manufacturing assurances, such as CE certification? And could your stamping operation personnel benefit from other language or metric displays? Does the servo feed control allow you to toggle between these settings?

Mind Strip Alignment

Strip alignment is important when using a servo feed. From die to payoff reel, start square—perhaps something as simple as using a carpenter square to check the strip. The feed may be mounted to the die, bolster plate, adjustable bracket or stand, and mounting should be rigid and straight into the die. The feed should not push material uphill nor downhill, and electric power should be free of noise and correctly grounded. Again, the servo feed should be kept clean, particularly the feed rolls and control cabinet. Also protect cables running from the servo motor to the control cabinet. Keep them out of the path of fork lifts and foot traffic.

Roll size matters, more in terms of deflection than grip. Feed rolls should be large enough in diameter so that they will not bow or deflect. A 2.75-in.-dia. roll will not have significantly more material grip than a 1.75-in.-dia. roll. For ideal material control, upper and lower feed rolls should be driven and be of the same diameter. A small upper roll coupled with a larger lower roll is difficult to synchronize.

Need to Save Space?

Combining a high-performance servo feed with a precision stock straightener in one combo unit can



A tandem servo feed, with an entrance and exit servo used to grip and move the material in harmony, is ideal for feeding thin or flexible material. Electronic gearing between the two feeds maintains light tension on the material. Tandem feeds may be used with coil stock, strip stock, piloted dies and gag dies.

save as much as 10 ft. of floor space. The integrated unit eliminates a material loop between the feed and straightener, easing setup and control of the entire straightening and feeding process. Consider this option if space is at a premium in your stamping operation.

Information for this article supplied by Rapid-Air Corp., Rockford IL. Tel. 815/397-2578; www.rapidair.com.

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